



**In The United States Patent And Trademark Office**

Appn. Number: 09/877,585  
Appn. Filed: June 8, 2001  
Applicant: William C. Basford  
Title: Apparatus to Reduce Base Drag Behind Bluff Bodies  
Examiner/GAU Kiran B. Patel/3612

Newmarket, NH, 2002 Aug. 26, Monday

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SEP 03 2002  
GROUP 3600

**Response to Office Communication of 2002 June 27**

Assistant Commissioner for Patents  
Washington, DC 20231

Dear Sir or Madam:

The following responses are provided to the Office communication mailed on June 27, 2002, copy enclosed.

In response to Examiner's remarks 1 through 7, Applicant elects the invention designated by the Examiner as Species B - directed towards Fig. 8-13. Claims 5 through 18 read on this Species B of the invention.

After studying the specification, Applicant has concluded that the specification as written does not include the language needed to support a claim generic to both species of the invention. Applicant will decide in the future whether to file a separate divisional application for the related invention designated as species A - directed toward Fig. 7 of the current application.

Applicant has been advised by a patent attorney that an Amendment is not required at this time. Applicant assumes that a suitable amendment can be submitted after receipt of Examiner's substantive remarks on the elected invention.

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In response to Examiner's remark 8, Applicant is now able to provide additional information on Reference #23, the web site for the "aerodrag team" funded by the U.S. Dept. of Energy, at "<http://en-env.llnl.gov/aerodrag>". Please note that the web address has changed since the IDS was submitted.

At the time the IDS was filed, Applicant was unable to provide a printed copy of Ref. 23 because it exists only as large computer files on the internet, and applicant did not then have access to a high speed internet connection, a computer that could handle these large files with their many pages of color graphics, or a suitable color printer.

Applicant has recently gained access to a high speed computer network at the University of New Hampshire library and has been able to more fully explore the subject website, including all the html files and the available reports in Adobe Acrobat (\*.pdf) file format. The total number of pages in the publications listed on this website was found to be in excess of 1300 pages. This great number of pages has made it necessary for the Applicant to request a time extension to respond to the Office Communication. However, close reading of these publications has shown that most of the pages have little or no bearing on the current patent application, for the following reasons:

1. Although the title of the web site implies an ultimate goal of reducing the aerodynamic drag of heavy vehicles, **the short term goals of the team appear to be focused entirely on the tools and test methods to be used**, rather than on methods and devices for actual aerodynamic drag reduction. For example, the first page of the Multi-Year Program Plan or MYPP (file name mypp.pdf) clearly states "The goal of the proposed activities is to develop and demonstrate the ability to simulate and analyze aerodynamic flow around heavy truck vehicles using existing and advanced **computational fluid dynamics (CFD) tools**. The final products are validated CFD tools that can be used to reduce aerodynamic drag of heavy truck vehicles and thus improve their fuel efficiency."

As a direct result, most of the work of this "DOE aero drag team" to date has focused on developing these computer simulation methods (CFD) and assessing their accuracy by comparing the results to the results of wind tunnel tests of previously known methods of aerodynamic drag reduction, including base drag reduction.

The MYPP further states that the project is divided into two related and overlapping efforts, with one part being this computational effort, and a second part being the "Evaluation of Current and New Technologies" However, the budget table on page 22 of the MYPP shows that well over 80% of the funding has been committed to the computational effort.

2. Perhaps 10 to 15 percent of the total number of pages deal only with administrative matters such as program budgets, funding sources, staffing, assignments and scheduling of various tasks, etc.

3. Because the reports cover an ongoing multi-year contract with periodic team meetings, the reports from these meetings are often repetitive. For example, the Multi Year Program Plan (MYPP) is provided in at least three versions, with only minor revisions in the newer versions, and much of the same information in the MYPP is presented several more times in the program overview sections of several of the periodic

working group meeting reports. Furthermore, much of the other information included in the periodic working group meeting reports is presented several times in successive reports with little or no change.

4. Many pages of these publications deal with other components of total aerodynamic drag, such as forebody drag, drag resulting from the tractor-trailer gap, cooling air drag, or underbody drag, and have no bearing on the current patent application which deals only with methods and devices for base drag reduction.

5. The reports on the periodic working group meetings, such as the March 2000 Working Group Meeting, typically include all the reports from the separate members of the team into one big pdf file. Typically only the section near the front called a summary or project overview uses text in complete sentences. Most of the remaining pages in these publications consist of viewgraphs intended to accompany oral presentations, which therefore include little text and few complete sentences, making it difficult to understand what information they were intended to convey. The report on the Slot Blowing project at the Georgia Tech. Research Institute (GTRI) in the report of the March 2001 Working Group Meeting is a notable exception to this practice.

6. Several hundred pages of the publications show only data plots and other graphical data from the various computer simulations and wind tunnel tests, and typically provide little or no interpretation of the data or conclusions drawn from the tests.

Because of these reasons, the 1300 plus pages of publications provided little reward for the many days required to access and review them, making it difficult to decide which pages if any to copy and send to the patent office and leaving the Applicant wishing that he had never heard of this "aerodrag team" or their website. Therefore, applicant will have no objection if the Examiner simply deletes this reference from the list on the IDS.

However, because the Applicant has already listed this web site on the IDS, and because the Examiner may need to review the web site anyhow, Applicant has made copies of the pages deemed most relevant to the current patent application. Because of the excessive number of pages presented on the website, applicant has chosen to provide printed copies of only the few pages that are most relevant to the current patent application. The handwritten page numbers have been added by the Applicant. Copies will be provided in several packets as follows:

In Packet 23A the front or main page of the web site has been provided, along with the page (three sheets) that lists the publications currently available. Handwritten notes have been added by the applicant to provide the file names and number of pages for each publication. The files currently marked "temporarily unavailable" are in fact still available, but now only as black and white files with no color graphics, which reduced the size of these files. Another separate html page (six sheets) provides the summaries and lists the reports from the Nov. 99 Working Group Meeting, which were published as a series of separate pdf files

Packet 23B is the Multi-Year Program Plan (file name: mypp.pdf 22 pages).

Packet 23C is the report of the Heavy Vehicle Industry Site Visits in Feb. 1998 (file name 232623.pdf; 14 pages total) . Examiner's attention is directed to pages 8 and 9 (10 and 11 in the .pdf file) which include background information on the trucking industry, which supports the need for better methods and devices for reducing aerodynamic base drag.

Packet 23D includes five pages from the March 2000 Working Group Meeting report (file name 237965.pdf 130 pages total). It includes the five page summary and abstracts from the front of the file (pp 3-7).

Packet 23E includes two sections from the August 2000 Working Group Meeting report (file name 0800report.pdf 190 pages total). It includes the five page summary and abstracts from the front of the file (pp 3-7). and the 13 page Project Overview section (pp 11-23) Examiner's attention is directed to page 15 which shows the drag reduction achieved by testing full length boattail plates on a reduced size test model in a wind tunnel.

Packet 23F includes two sections from the March 2001 Working Group Meeting report (file name ucr1143848.pdf 215 pages total). It includes the seven page summary and abstracts from the front of the file (pp 3-9), and the 9 page section from NASA Ames (pp 84-92). Examiner's attention is directed to the last paragraph on page 7 which mentions future testing of both boattail plates and vortex generators on the generic conventional model (GCM), but which shows no awareness that the two methods can be used in combination to produce greater base drag savings than either method when used alone. Page 87 in the NASA Ames section also lists both boattail plates and vortex generators on the same page, but does not indicate any plans to test the two methods in combination.

Packet 23G includes six sheets with tables of contents, prepared by the Applicant, for six of the large pdf files on several of the Working Group Meetings, which may be useful to the Examiner.

In conclusion, the Applicant has found no information on this web site, either clearly stated, suggested or implied, that shows any awareness by this federal government funded "aerodrag team" that Vortex Generators can be used in combination with Boattail Plates to produce greater base drag reduction than either of the two methods used alone.

*William C. Basford*  
*Aug. 26, 2002*



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/877,585	06/08/2001	William Colin Basford		1568

7590 06/27/2002

WILLIAM COLIN BAFORD  
14 HEARTWOOD CIRCLE  
NEWMARKET, NH 03857

EXAMINER

PATEL, KIRAN B

ART UNIT	PAPER NUMBER
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3612

DATE MAILED: 06/27/2002



Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/877,585

Applicant(s)

BASFORD, WILLIAM COLIN

Examiner

Kiran B. Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-18 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. This application contains claims directed to the following patentably distinct species of the claimed invention:

Species A - directed towards Fig. 7,

Species B - directed towards Fig. 8-13.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, there appears to be no claim, which is generic to all species.

2. Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

3. Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).
4. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the Examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.
5. A telephone call was made to Mr. Basford to request an oral election to the above restriction requirement, but did not result in an election being made.
6. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement is traversed (37 CFR 1.143).
7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if

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one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

8. The information disclosure statement filed 9/8/01 fails to comply with 37 CFR 1.98(a)(2), which requires a complete legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiran B. Patel whose telephone number is 703-305-0254. The examiner can normally be reached on M-F 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Dayoan, can be reached on 703-308-3102. The fax phone numbers for the organization where this application or proceeding is

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assigned are 703-746-3522 for regular communications and 703-308-3297 for

After Final communications.

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Kiran B. Patel

Primary Examiner

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June 25, 2002

**Attachment for PTO-948 (Rev. 03/01, or earlier)**  
**6/18/01**

**The below text replaces the pre-printed text under the heading, "Information on How to Effect Drawing Changes," on the back of the PTO-948 (Rev. 03/01, or earlier) form.**

**INFORMATION ON HOW TO EFFECT DRAWING CHANGES**

**1. Correction of Informalities -- 37 CFR 1.85**

New corrected drawings must be filed with the changes incorporated therein. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the Notice of Allowability. Extensions of time may **NOT** be obtained under the provisions of 37 CFR 1.136(a) or (b) for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

**2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.**

All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings **MUST** be approved by the examiner before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes.

**Timing of Corrections**

Applicant is required to submit the drawing corrections within the time period set in the attached Office communication. See 37 CFR 1.85(a).

Failure to take corrective action within the set period will result in **ABANDONMENT** of the application.